

WHAT IS CLAIMED IS:

1. A composite stent-graft tubular prosthesis comprising:
an inner PTFE tubular structure;
an outer PTFE tubular structure positioned about said inner PTFE tubular structure; and
5 a diametrically deformable stent interposed between said inner and outer PTFE tubular structure, said stent being formed from an elongate wire helically wound with a plurality of longitudinally spaced turns into an open tubular configuration, each of said turns including successive upper and lower wave-like peaks wherein selective ones of said upper and lower peaks are exposed exteriorly of said outer PTFE structure.

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2. A composite stent-graft prosthesis of claim 1 wherein said outer PTFE tubular structure includes a plurality of slits therethrough, said selective upper and lower peaks extending through said slits.

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3. A composite stent-graft prosthesis of claim 1 wherein said outer PTFE tubular structure includes a plurality of apertures therethrough and wherein said selective upper and lower peaks are aligned with said apertures.

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4. A composite stent-graft prosthesis of claim 3 wherein said upper peaks of one turn are juxtaposed with respect to said lower peaks of an adjacent turn.

5. A composite stent-graft prosthesis of claim 4 wherein each aperture of said outer tubular

structure exposes said juxtaposed upper and lower peaks.

6. A composite stent-graft prosthesis of claim 1 wherein said inner and outer PTFE tubular structures are formed of sheets.

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7. A composite stent-graft prosthesis of claim 1 wherein said outer PTFE tubular stent is adheringly secured to said inner PTFE tubular structure at spaces between said wound wire.

10 8. A composite stent-graft prosthesis of claim 7 wherein said outer PTFE tubular structure is laminated to said inner PTFE tubular stent.

9. A composite stent-graft tubular prosthesis comprising:

a first PTFE tubular structure;

a diametrically deformable stent positioned over said first PTFE tubular structure, said

15 stent being formed of an elongate helically wound wire formed into an open tubular configuration by a plurality of turns, said helically wound wire including a plurality of transverse generally wave-like undulations therealong defining successive upper and lower peaks; and

20 a second PTFE tubular structure positioned over said stent, said second PTFE tubular structure including a plurality of apertures therethrough, said apertures being aligned with selective ones of said upper and lower peaks to expose said upper and lower peaks to thereby enhance longitudinal flexibility of said prosthesis.

10. A composite stent-graft prosthesis of claim 9 wherein said stent includes said wave-like undulations being arranged such that the upper peaks of one turn are juxtaposed with the lower peak of an adjacent turn.

5 11. A composite stent-graft prosthesis of claim 10 wherein said aperture of said second PTFE tubular structure are aligned with selective ones of said juxtaposed upper and lower peaks.

12. A composite stent-graft prosthesis of claim 11 wherein said first and second tubular structures are formed of expanded PTFE.

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13. A composite stent-graft prosthesis of claim 11 wherein said first and second tubular structures are formed from PTFE sheets.

14. A composite stent-graft prosthesis of claim 9 wherein said first PTFE tubular structure is 15 laminated to said second PTFE tubular structure through said wound wire.

15. A method of forming a stent-graft prosthesis comprising the step of:
20 forming a first PTFE tubular structure;
positioning a stent over said first PTFE tubular structure, said stent having a tubular configuration formed of a plurality of turns of a helically wound wire, each of said turns including successive upper and lower wave-like peaks;
forming a second PTFE tubular structure over said stent; and

exposing selective ones of said upper and lower wave-like peaks through said second PTFE tubular structure.

16. A method of claim 15 further including the step of adheringly securing said first PTFE
5 tubular stent to said second PTFE tubular structure through spaces between said wound wire.

17. A method of claim 16 wherein said exposing step includes:

placing a plurality of slits through said second PTFE tubular structure at a location
aligned with said selective upper and lower peaks of said stent; and
10 extending said upper and lower peaks of said stent through said slits.

18. A method of claim 17 wherein said extending step includes:

lifting said selective upper and lower peaks;
tucking a portion of said second PTFE tubular structure adjacent said slit, under said
15 upper and lower peaks.

19. A method of claim 17 wherein said placing step includes:
cutting said slits using a cutting tool.

20. A method of claim 17 wherein said placing step includes:
laser burning said slits through said second PTFE tubular structure.

21. A method of claim 16 wherein said exposing step includes:

forming said second PTFE tubular structure with a plurality of apertures, said apertures being at a location adjacent said selective upper and lower peaks.

5 22. A method of claim 15 wherein said second PTFE tubular structure is sintered prior to said

exposing step.

23. A method of claim 15 wherein said second PTFE tubular structure is sintered subsequent

to said exposing step.

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